

Application No. 10/664,718
Amendment Dated September 7, 2004
Reply to Office Action of May 6, 2004

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An electron source, comprising:

an electron emitter for generating an electron beam;

a first deflection stage for radiating the electron beam onto a sample; and

a second deflection stage being arranged between the first deflection stage and the sample such that a distance from the second deflection stage to the first deflection stage is greater than a distance from the second deflection stage to the sample, said second deflection stage and being adapted for a beam orientation correction;

a casing extending from the first deflection stage to the second deflection stage; and

an exit aperture arranged between the second deflection stage and the sample, said exit aperture representing a barrier for gases which could travel from the sample into the casing.

2. (Canceled).

3. (Canceled).

4. (Currently Amended) The electron source according to claim 31, wherein the casing is made of or covered with a magnetic field shielding material.

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5. (Currently Amended) The electron source according to claim ~~3~~1, wherein an inner space of the casing is connected with a pumping device being adapted for evacuating the inner space of the casing.
6. (Canceled).
7. (Currently Amended) The electron source according to claim ~~6~~1, wherein the exit aperture has a point shape or a slit shape.
8. (Currently Amended) The electron source according to claim ~~1-~~or~~2~~, wherein a third deflection stage is provided between the second deflection stage and the sample.
9. (Currently Amended) The electron source according to claim 8, wherein the exit aperture is provided between the second and third deflection stages.
10. (Currently Amended) The electron source according to claim ~~6~~1, wherein the exit aperture is covered with a foil capable of transmitting the electron beam.
11. (Currently Amended) A Reflection High Energy Electron Diffraction (RHEED) measurement system, comprising:
 - an electron source according to claim 1,
 - a sample holder for supporting said sample to be investigated, and
 - a detector device for detecting diffracted electrons.
12. (Original) The RHEED measurement system according to claim 11, wherein the sample holder is positioned in a vacuum chamber.

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13. (Currently Amended) The RHEED measurement system according to claim 11, wherein ~~an aperture is provided at or near the second deflection stage, the aperture is covered with a foil capable of transmitting the electron beam, and the sample holder is positioned under atmospheric pressure.~~

14. (Currently Amended) A method of radiating an electron beam with an electron source according to claim 1 onto a sample, comprising the steps of:

generating the electron beam with ~~an~~ the electron emitter;

directing the electron beam with ~~a~~ the first deflection stage towards the sample; and

correcting the beam orientation of the electron beam with ~~a~~ the second deflection stage ~~being arranged between the first deflection stage and the sample.~~

15. (Original) The method according to claim 14, wherein the electron beam is deflected from an optical axis with the first deflection stage, wherein the beam travelling between the two deflection stages becomes elongated from the axis and the second deflection stage is bending the beam back towards the axis of the electron source.

16. (Original) The method according to claim 14 or 15, wherein a radiation path of the electron beam between the first and second deflection stages is shielded with a casing.

17. (Original) The method according to claim 16, wherein the path of the electron beam within the casing is shielded against magnetic fields.

18. (Original) The method according to claim 17, wherein an inner space of the casing is evacuated with a pumping device.

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19. (Original) The method according to claim 18, wherein the irradiated sample is located under atmospheric pressure.